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EXAMINER

THOMPSON, JAMES A

ART UNIT

PAPER NUMBER

2624

DATE MAILED: 12/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/024,000

Applicant(s)

SUZUKI, HIROYUKI

Examiner

James A. Thompson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2001 and 11 March 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/11/2002.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-8 and 10-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Fujiwara (US Patent 4,813,078).

Regarding claim 1: Fujiwara discloses an image processing apparatus (figure 1 of Fujiwara) comprising a halftone dot characteristic sampling section (figure 1(3) and column 4, lines 57-65 of Fujiwara) that samples a halftone dot characteristic indicative of a characteristic of a halftone dot based on image data (column 4, line 65 to column 5, line 6 of Fujiwara); a first counter (figure 1(7) of Fujiwara) that counts the number of halftone dot characteristics that exist in a first region (figure 7a and figure 7b of Fujiwara) including a target pixel from among halftone dot characteristics sampled by the halftone dot characteristic sampling section (figures 10a-10b and column 6, lines 29-41 of Fujiwara); an edge pixel sampling section (figure 1(4) of Fujiwara) that samples a pixel belonging to an edge region based on image data (figure 2c and column 4, lines

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54-65 of Fujiwara); a second counter (figure 1(5) of Fujiwara) that counts the number of edge pixels that exist in a second region (e.g., figure 8a(F) of Fujiwara, or one of the other regions shown in figure 8a and figure 8b of Fujiwara) including a target pixel from among edge pixels sampled by the edge pixel sampling section (column 6, lines 6-14 of Fujiwara); and a discriminator (figure 1(8) and column 6, lines 48-54 of Fujiwara) that discriminates whether or not the target pixel belongs to a character region in a halftone dot image based on the count result of the first counter and the count result of the second counter (column 6, line 60 to column 7, line 6 of Fujiwara).

Regarding claim 2: Fujiwara discloses that the edge pixel sampling section contains an edge detector that detects an edge quantity and samples an internal edge pixel such that a positive edge detection quantity has been detected by the edge detector (figure 2c; figure 6; column 5, lines 56-59; and column 6, lines 3-11 of Fujiwara).

Regarding claim 3: Fujiwara discloses that the discriminator discriminates that a target pixel belongs to a character region in a halftone dot image in the case that the count value of the first counter is smaller than a first threshold (figures 10a-10b and column 6, lines 35-48 of Fujiwara) and the count value of the second counter is greater than a second threshold (figure 6 and column 6, lines 6-14 of Fujiwara).

Regarding claim 4: Fujiwara discloses a continuity detecting section that detects whether or not an edge has continuity (figure 6 and column 5, lines 17-21 of Fujiwara), wherein the discriminator discriminates whether or not the target pixel belongs to a character region in a halftone dot image taking

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into consideration a detection result of the continuity detecting section (column 4, lines 24-27 of Fujiwara).

Regarding claim 5: Fujiwara discloses including a correction unit that corrects image data based on a discrimination result of the discriminator (column 6, lines 49-55 of Fujiwara). By displaying the recognized character stored in the character dictionary (column 6, lines 49-55 of Fujiwara), the image data is corrected accordingly, since the proper character is displayed rather than the imprecisely drawn character that was recognized as a character in said character dictionary.

Regarding claim 6: Fujiwara discloses that the halftone dot characteristic sampling section contains a filter (figure 2b of Fujiwara) that detects isolate points as halftone dot characteristics (column 4, lines 57-65 of Fujiwara). A single, and thus isolated, picture element can be considered a boundary point, and thus in a character region (figure 2c of Fujiwara), based on the results of the filter shown in figure 2b of Fujiwara (column 4, lines 57-65 of Fujiwara).

Regarding claim 7: Fujiwara discloses that the number of pixels in the first region (figure 7a of Fujiwara) is greater than the number of pixels in the second region (e.g., figure 8a (F) of Fujiwara). Clearly, an entire image is larger than one of a plurality of sub-regions of the same image.

Regarding claim 8: Fujiwara discloses an image processing apparatus (figure 1 of Fujiwara) comprising a first discrimination unit (figure 1(6) of Fujiwara) that discriminates whether or not each pixel of the image data is a halftone dot characteristic indicative of a characteristic of a halftone dot image (column 6, lines 22-30 of Fujiwara) by using a first filter (figures 2b-2c; figure 6; and column 6, lines 29-36 of

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Fujiwara). The first filter is the discrimination between background portions, character portions, and picture element string numbers shown in figure 6 of Fujiwara (column 6, lines 29-36 of Fujiwara).

Fujiwara further discloses a second discrimination unit (figure 1(4) of Fujiwara) that discriminates whether or not each pixel of image data is a pixel that belongs to an edge region (figure 2c and column 4, lines 54-65 of Fujiwara) by using a second filter (figures 2a-2c of Fujiwara); a first counter (figure 1(7) of Fujiwara) that counts the number of halftone dot characteristics that exist in a first pixel matrix (figure 7a and figure 7b of Fujiwara) consisting of a plurality of pixels containing a target pixel based on the discrimination result of the first discrimination unit (figures 10a-10b and column 6, lines 29-41 of Fujiwara); a second counter (figure 1(5) of Fujiwara) that counts the number of edge pixels that exist in a second pixel matrix (e.g., figure 8a(F) of Fujiwara, or one of the other regions shown in figure 8a and figure 8b of Fujiwara) consisting of a plurality of pixels containing a target pixel based on the discrimination result of the second discrimination unit (column 6, lines 6-14 of Fujiwara); a discrimination unit (figure 1(8) and column 6, lines 48-54 of Fujiwara) that discriminates whether or not a target pixel belongs to a character region in a halftone dot image based on the count result of the first counter and the count result of the second counter (column 6, line 60 to column 7, line 6 of Fujiwara); and an image processing unit (figure 1(10) of Fujiwara) that processes image data based on the discrimination result of the discrimination unit (column 6, lines 49-55 of Fujiwara).

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Regarding claim 10: Fujiwara discloses that the discrimination unit discriminates that a target pixel belongs to a character region in a halftone dot image in the case that a count value of the first counter is smaller than a first threshold (figures 10a-10b and column 6, lines 35-48 of Fujiwara) and a count value of the second counter is greater than a second threshold (figure 6 and column 6, lines 6-14 of Fujiwara).

Regarding claim 11: Fujiwara discloses a continuity detecting section that detects whether or not an edge has continuity (figure 6 and column 5, lines 17-21 of Fujiwara), wherein the discrimination unit discriminates whether or not the target pixel belongs to a character region in a halftone dot image taking into consideration a detection result of the continuity detecting section (column 4, lines 24-27 of Fujiwara).

Regarding claim 12: Fujiwara discloses that the first filter (figure 2b of Fujiwara) detects isolate points, and the first discrimination unit detects the isolation points as halftone dot characteristics (column 4, lines 57-65 of Fujiwara). A single, and thus isolated, picture element can be considered a boundary point, and thus in a character region (figure 2c of Fujiwara), based on the results of the filter shown in figure 2b of Fujiwara (column 4, lines 57-65 of Fujiwara).

Regarding claim 13: Fujiwara discloses that the first pixel matrix (figure 7a of Fujiwara) is larger than the second pixel matrix (e.g., figure 8a(F) of Fujiwara). Clearly, an entire image is larger than one of a plurality of sub-regions of the same image.

Regarding claim 14: Fujiwara discloses a step 1 of discriminating whether or not each pixel of the image data is a half-

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tone dot characteristic indicative of a characteristic of a halftone dot image (column 6, lines 22-30 of Fujiwara) and discriminating whether or not each pixel of image data is an edge pixel that belongs to an edge region (figure 2c and column 4, lines 54-65 of Fujiwara); a step 2 of counting the number of halftone dot characteristics that exist in a first pixel matrix (figure 7a and figure 7b of Fujiwara) consisting of a plurality of pixels containing a target pixel based on the discrimination result in the step 1 (figures 10a-10b and column 6, lines 29-41 of Fujiwara) and counting the number of edge pixels that exist in a second pixel matrix (e.g., figure 8a(F) of Fujiwara, or one of the other regions shown in figure 8a and figure 8b of Fujiwara) consisting of a plurality of pixels containing a target pixel; a step 3 of discriminating whether or not a target pixel belongs to a character region in a halftone dot image based on the number of halftone dot characteristics and the number of edge pixels counted in step 2 (column 6, line 60 to column 7, line 6 of Fujiwara); and a step 4 of processing image data based on the discrimination result in the step 3 (column 6, lines 49-55 of Fujiwara).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiwara (US Patent 4,813,078) in view of Matsukubo (US Patent 6,504,949 B2).

Regarding claim 9: Fujiwara does not disclose expressly that the second discrimination unit contains a discriminator that discriminates whether an edge region is an internal edge region or an external edge region, and pixels in an edge region the discriminator has discriminated as an internal edge region are discriminated as edge pixels.

Matsukubo discloses discriminating whether an edge region (figure 29E and figure 30E of Matsukubo) is an internal edge region (figure 29E(right-side curve of black pixels) and figure 30E(inside border lines of "A" character) of Matsukubo) or an external edge region (figure 29E(left-side curve of black pixels) and figure 30E(outside border lines of "A" character) of Matsukubo), and pixels in an edge region that has been discriminated as an internal edge region are discriminated as edge pixels (column 14, lines 46-54 of Matsukubo).

Fujiwara and Matsukubo are combinable because they are from the same field of endeavor, namely the recognition and processing of characters in digital image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to specifically determine and discriminate between internal and external edge pixels, as taught by Matsukubo. The suggestion for doing so would have been that specifying internal edge pixels will better define the character, especially characters with interior shapes, such an "A" or "R". Therefore, it would have been obvious to combine Matsukubo with Fujiwara to obtain the invention as specified in claim 9.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Hiroki Kanno, US Patent 5,701,364, 23 December 1997.
- b. Yamamoto et al., US Patent 3,829,831, 13 August 1974.
- c. Keiji Kojima, US Patent 5,018,216, 21 May 1991.
- d. Hwai T. Tai, US Patent 5,477,335, 19 December 1995.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Thompson whose telephone number is 571-272-7441. The examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on 571-272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James A. Thompson
Examiner
Art Unit 2624


08 December 2005



THOMAS D. LEE